*REMARKS*

The specification has been amended to identify "canola" as a trademark. According to the *Encyclopedia of Seeds: Science, Technology and Uses* (pages 45-46, published 2006 by CABI, Oxfordshire UK) "canola™" is defined as the seed, oil and meal form *Brassica napus*, *Brassica rapa* and *Brassica juncea* that contains less than 2% of the total fatty acids as erucic acid and less than 30 μmol/g of aliphatic glucosinolates in the moisture-free meal. Thus, the specification has been amended to include this trademark definition.

The specification has been further amended to delete hyperlinks.

Claim 1 has been amended to clarify the claim language to indicate that the plant cell comprises the seed-oil suppressing gene and that the plant comprises the plant cells and expresses this gene.

The dependency of claim 5 has been amended to provide proper antecedent basis for "said cotton plant."

Claim 9 has been amended to provide proper antecedent basis.

Claims 16 and 22 have been amended to insert the name for ACCase and to delete the combinations.

The dependency of claim 17 has been amended to provide proper antecedent basis for two seed-oil suppressing genes.

Claims 18, 25 and 44 have been amended to provide the names for the abbreviated gene names.

Claim 32 has been amended to clarify the language of the claim and to provide proper antecedent basis.

Claims 32-35 have been amended to specify an "exogenous" stimulus in place of an "external" stimulus. Support for the use of the term "exogenous" can be found for the examples of stimuli provided in paragraph [00020] which describes stimuli that are all external to the plant and thus are exogenous to the plant.

Claim 40 has been amended to clarify the language of the claim.

Several claims have been amended to change their dependencies in order to clarify such claims.

Claims 15, 20, 21, 24, 38, 43 and 44 have been canceled.

Claims 45-87 have been canceled as being directed to non-elected inventions without prejudice to filing one or more divisional applications.

New claims 88-124 have been added and are directed to subject matter similar to the subject matter of claims 1-44 and include plant cells and plants that contain two seed-oil suppressing genes. Support for the presence of two seed-oil suppressing genes can be found, for example, in original claims 17 and 24 and in paragraph 15 of the specification.

Applicants submit that the above amendments are not new matter, and their entry is requested.

The Examiner objected to the presence of hyperlinks in the specification. The specification has been amended to remove such hyperlinks, thus obviating this objection.

The Examiner objected to claims 5, 18 and 24 for informalities. These claims have either been amended or canceled to obviate these objections

The Examiner has rejected claims 24-25 and 43 under 35 U.S.C. § 112, first paragraph for lack of written description. The essence of the Examiner's rejection is that the specification does not provide an actual description of an operative, fully described RNAi molecule and that such a description is required by *University of California v. Eli Lilly and Co.*, 119 F.3 1559, 43 U.S.P.Q.2d 1398 (Fed. Cir. 1997). Without acceding to the propriety of this rejection, Applicants have nevertheless canceled claims 24 and 43 and have amended claim 25 to depend from claim 23.

In view of the above amendments and remarks, Applicants submit that the claims are fully described by the specification. Withdrawal of this rejection is requested.

The Examiner has rejected claims 1-7 and 13-15 under 35 U.S.C. § 112, first paragraph for lack of enablement beyond cotton varieties DP 555 BG/BR and DP 493. Applicants submit that the Examiner is in error in this rejection and that a proper analysis of the Wands factors, particularly in

view of the knowledge in the art, does not support an enablement rejection of the claimed subject matter.

*The nature of the invention.*

The present invention is directed to plant cells comprising one or two seed-oil suppressing genes. The present invention is further directed to plants comprising and expressing one or two seed-oil suppressing genes. Each of the genes is under the control of a plant-active promoter. Expression of the genes in the plant results in a reduction in seed-oil and a concomitant increase in plant carbohydrate and/or protein. Each of the seed-oil suppressing genes is either a mutant allele of a gene naturally occurring in the plant or is transgene.

The subject matter of the present invention is not as unpredictable as alleged by the Examiner. In making this allegation, the Examiner cites *Mycogen Plant Sci., Inc. v. Monsanto Co.*, 243 F.3d 1316 (Fed. Cir. 2001). Applicants note that the patents involved in this litigation issued from applications that were filed in 1995 tracing parentage back to applications filed in 1983. Certainly in 1983, more than 20 years before the filing of the present application, the field of plant transformation was unpredictable. However, such a general unpredictability was no longer the case in 2003 as described in further detail below and demonstrated by the references discussed below.

*The breadth of the claims.*

The claims encompass the plant cells comprising one or two seed-oil suppressing genes. The present invention is further directed to plants comprising and expressing one or two seed-oil suppressing genes. Each of the genes is under the control of a plant-active promoter. Expression of the genes in the plant results in a reduction in seed-oil and a concomitant increase in plant carbohydrate and/or protein. Each of the seed-oil suppressing genes is either a mutant allele of a gene naturally occurring in the plant or is transgene.

The Examiner has asserted that such seed-oil suppressing genes expressly includes any gene because any and all genes directly or indirectly affect seed-oil biosynthesis suppression. The Examiner has not provided any scientific evidence to support this bald assertion as required by *In re Wright*, 27 USPQ 2d, 1510 (Fed. Cir. 1993) and *In re Marzocchi*, 169 USPQ 367 (CCPA 1973).

In fact, the prior art contradicts the Examiner's assertion. It is well known in the art that genes can be introduced into plants to increase seed-oil content and to increase certain components of the seed-oil, e.g. increase oleic acid content. It is clear that these genes do not result in a reduction in seed-oil and a concomitant increase in plant carbohydrate and/or protein. Thus, the prior art shows that the claim scope is narrower than that alleged by the Examiner.

*Amount of guidance and the presence of working examples or lack of working examples.*

The specification specifically describes the nature and practice of the claimed invention, including citing prior art references that disclose techniques that are used in the practice of the claimed invention. Table 1 lists prior art reference, paragraphs in the specification and a brief summary of the content. Applicants note that although this list is only a subset of the literature cited in the application, the literature provides extensive coverage of suitable promoters, nucleotide sequences and transformation methodologies. Table 1 demonstrates the extensive guidance provided in the specification for the practice of the claimed invention.

TABLE 1

| Reference* | Paragraph** | Summary of Content |
|---|---|---|
| 3C | 0053, 0085 | methods to suppress both early and late oil biosynthesis enzymes |
| 3D | 0083 | seed-specific promoter |
| 3E | 0083 | methods to develop cotton mutants |
| 3F | 0086 | seed-specific promoter |
| 3I | 0083 | seed-specific promoter |
| 3J | 0046 | nucleotide sequences for late oil biosynthesis enzymes |
| 3M | 0006, 0050 | methods to develop transgenic cotton plants with modified seed-oil |
| 3O | 0083 | seed-specific promoter |
| 3Q | 0042 | methods to use RNAi in plants |
| 3R | 0042 | methods to use antisense in plants |
| 3S | 0042 | methods to use ribozymes |
| 3Z | 0083 | seed-specific promoter |
| 4B | 0042 | methods to use RNAi |
| 4E | 0042 | methods to use zinc finger transcription factors in plants |
| 4J | 0046 | nucleotide sequences for late enzymes |
| 4K | 0042 | methods to use immunomodulation in plants |

| | | |
|---|---|---|
| 4N | 0006, 0046 | methods to develop plant mutants for late oil biosynthesis enzymes |
| 4R | 0083 | seed-specific promoter |
| 4W | 0102 | methods to develop transgenic plants |
| 4X | 0083 | methods to develop transgenic plants |
| 4Y | 0050 | methods to develop transgenic cotton plants with modified seed-oil |
| 5A | 0038, 0046 | methods to produce plant mutants for late oil biosynthesis enzymes |
| 5B | 0040, 0045 | nucleotide sequences for early oil biosynthesis enzymes |
| 5J | 0083 | seed-specific promoter |
| 5M | 0083 | seed-specific promoter |
| 5P | 0042, 0044, 0045, 0084 | nucleotide sequences for early oil biosynthesis enzymes |
| 5Q | 0042, 0045, 0084 | nucleotide sequences for early oil biosynthesis enzymes |
| 5S | 0042, 0048, 0084 | methods to develop plants with modified late oil biosynthesis proteins |
| 5U | 0045 | methods to develop plants with modified early oil biosynthesis proteins |
| 5X | 0044 | nucleotide sequences for early oil biosynthesis enzymes |
| 6D | 0049, 0083, 0084 | seed-specific promoter in cotton |
| 6E | 0084 | methods to develop transgenic cotton plants |
| 6F | 0006 | methods to develop plants with modified late oil biosynthesis enzymes |
| 6H | 0083 | seed-specific promoter |
| 6L | 0083 | seed-specific promoter |
| 6M | 0043 | nucleotide sequences for early oil biosynthesis enzymes |
| 6Q | 0006, 0047 | methods to develop plants with modified late oil biosynthesis enzymes |
| 6R | 0046 | nucleotide sequences for late oil biosynthesis enzymes |

* Refers to the references cited in the Information Disclosure Statement.

** Refers to the paragraphs in the published application (2004/0133944).

Furthermore, Applicants submit that guidance is provided in the specification on how to select genes to mutate or suppress using recombinant methods. Paragraphs 0042 through 0048 (with reference to the published application) provide guidance on genes to mutate or suppress using recombinant methods. Although, it is not necessary to know the gene targets prior to the development of mutagenized plants when a clear phenotype (such as low oil and high fiber yields)

are desired. Lethal phenotypes and other deleterious changes are readily identified using the methods described in paragraph 0054, 0055 and 0056 (with reference to the published application).

*State of the prior art.*

The state of the prior art at the time of the present invention is quite advanced as demonstrated by the references cited in the above Table. These references clearly show that a large number of promoters that are active in plants were well known to the skilled artisan. Plant transformation procedures for a large number of plant species were also well known to the skilled artisan. The preparation of DNA constructs for use in plant transformations were also well known to the skilled artisan. In addition, genes involved in oil biosynthesis, including genes for early oil biosynthesis enzymes and genes for late oil biosynthesis enzymes, were well known to a skilled artisan. At the time of the present invention, it was also well known that plants could be transformed with exogenous genes, i.e., genes isolated from other plant species or other organisms, using various explant tissues for transformation. It was also well known that these genes were expressed in the transformed plants. Table 2 contains a list that is representative of publications showing the production of transgenic plants expressing exogenous genes.

TABLE 2

Brears, T. et al. (1993). Ectopic Overexpression of Asparagine Synthetase in Transgenic Tobacco. Plant Physiology 103:1285-1290. (pea gene in tobacco)

Plant, A.L. et al. (1994). Regulation of an Arabidopsis oleosin gene promoter in transgenic Brassica napus. Plant Molecular Biology 25:193-205. (*Arabidopsis* gene promoter in rapeseed)

Rivoal, J. and Hanson, A.D. (1994). Metabolic Control of Anaerobic Glycolysis (Overexpression of Lactate Dehydrogenase in Transgenic Tomato Roots Supports the Davies-Roberts Hypothesis and Points to a Critical Role for Lactate Secretion. Plant Physiology 106:1179-1185. (barley gene in tomato)

Mikami, K. et al. (1995). Developmental and tissue-specific regulation of the gene for the wheat basic/leucine zipper protein HBP-1a(17) in transgenic Arabidopsis plants. Mol Gen Genet 248:573-82. (wheat gene in *Arabidopsis*)

Matsuda, n. (1996). Partial Male Sterility in Transgenic Tobacco Carrying Antisense and Sense PAL cDNA under the Control of a Tapetum-Specific Promoter. Plant and Cell Physiology, 37:215-222. (sweet potato gene with rice promoter in tobacco)

Halliday, K.J. (1997). Expression of heterologous phytochromes A, B or C in transgenic tobacco plants alters vegetative development and flowering time. Plant J 12:1079-90. (oat and *Arabidopsis* genes in tobacco)

Russell, D.A. and Fromm, M.E. (1997). Tissue-specific expression in transgenic maize of four endosperm promoters from maize and rice. Transgenic Res 6:157-68. (rice promoter in maize)

Williams-Carrier, R.E. et al. (1997). Ectopic expression of the maize kn1 gene phenocopies the Hooded mutant of barley. Development 124:3737-45. (maize gene in barley)

Rao, K.V. et al. (1998). Expression of snowdrop lectin (GNA) in transgenic rice plants confers resistance to rice brown planthopper. Plant J 15:469-77. (snowdrop gene in rice)

Su, J. et al. (1998). Dehydration-stress-regulated transgene expression in stably transformed rice plants. Plant Physiol ;117:913-22. (barley gene in rice)

Dai N. et al. (1999). Overexpression of Arabidopsis hexokinase in tomato plants inhibits growth, reduces photosynthesis, and induces rapid senescence. Plant Cell 11:1253-66. (*Arabidopsis* gene in tomato)

Digeon, J.F. et al. (1999). Cloning of a wheat puroindoline gene promoter by IPCR and analysis of promoter regions required for tissue-specific expression in transgenic rice seeds. Plant Mol Biol 39:1101-12. (wheat promoter in rice)

Facciotti, M.T. et al. (1999). Improved stearate phenotype in transgenic canola expressing a modified acyl-acyl carrier protein thioesterase. Nature Biotechnology 17:593-597. (mangosteen gene in rapeseed)

Goossens, A. et al. (1999). The arcelin-5 gene of Phaseolus vulgaris directs high seed-specific expression in transgenic Phaseolus acutifolius and Arabidopsis plants. Plant Physiol 120:1095-104. (bean gene in *Arabidopsis*)

Jenkins, E.S. et al. (1999). Dehiscence-related expression of an Arabidopsis thaliana gene endoding a polygalacturonase in transgenic plants of Brassica napus. Plant, Cell & Environment 22:159-168. (*Arabidopsis* gene in rapeseed)

Ku, M.S. et al. (1999). High-level expression of maize phosphoenolpyruvate carboxylase in transgenic rice plants. Nat Biotechnol 17:76-80. (maize gene in rice)

Liu, D. et al. (1999). The Arabidopsis transposon Tagl is active in rice, undergoing germinal transposition and restricted, late somatic excision. Mol Gen Genet 262:413-20. (*Arabidopsis* gene in rice)

Schake, S.A. (1999). Analysis of transgenic tobacco that express maize Catalase3. Ph.D. Dissertation, Texas Tech University. (maize gene in tobacco)

Van Breusegem, F. et al. (1999). Overproduction of Arabidopsis thaliana FeSOD confers oxidative stress tolerance to transgenic maize. Plant Cell Physiol 40:515-23. (*Arabidopsis* gene in maize)

As the Examiner will note, all of the above papers were published by 1999, four years prior to the filing of the present application. Even additional references can be found and cited that demonstrate the production of transgenic plants expressing exogenous genes.

*The predictability or lack thereof in the art.*

The predictability in the art is determined, not by looking at whether the molecular characterization of the individual lines needs to be made, but whether a skilled artisan would have a reasonable expectation of success that plants having a reduction of oil in the seed and concomitant increase in plant carbohydrate and/or protein. Applicants submit that by early 2003, the effective filing date of the present application, the expression of exogenous genes in various plant species was well known. Similarly, techniques to control expression, such as use of constitutive promoters or inducible promoters, were well known. In addition, techniques to modify the level of expression of such exogenous genes were also well known. The predictability in the art is shown by the above cited list of references which clearly demonstrate that the skilled artisan had a reasonable expectation of success for the production of transformed plants containing exogenous genes and to the expression of the exogenous genes in the transformed plants.

Applicants submit that the individual lines do not need to be molecularly characterized in order to determine whether the oil suppression has been accomplished, even if such molecular characterization may be necessary for U.S. regulatory approval. However, due to the intended phenotypic outcome of this invention, simple measurements of oil reduction made on either somatic embryos or T1 seed (seed grown on the primary transformant plant) combined with a measure of

fiber yield can provide robust evaluation of individual lines without molecular characterization. Furthermore, although the Examiner asserts that since oil manipulation for quality or augmentation is elusive, difficult, unpredictable, then oil suppression will also be elusive. Applicants submit that this statement is not true, and would be recognized not to be true by a skilled artisan, because the suppression of a metabolic pathway is much easier than either quality or augmentation changes. Due to the multiple steps in oil-biosynthesis, disruption at few points along the conversion can dramatically reduce the total flux through a pathway.

In addition, the predictability of the present invention is readily shown by work published subsequent to the present application's filing date. In accordance with the guidance presented in the specification, cotton was transformed to contain a *Brassica* non-functional allele of the *FAD2* gene. Seeds of the transformed cotton plants had reduced oil accumulation. The fiber percent and fiber content appeared to be elevated in the transformed cotton plants with a reduction in seed-oil. This work is shown in a Poster of Neogi et al. that was presented at the Plant Biology 2006 meeting in Boston, Massachusetts held on 5-9 August 2006. A copy of the meeting announcement, meeting abstract, poster and a document containing the information from the poster is attached for the convenience of the Examiner. This work is also shown in U.S. patent application publication No. 2007/0028330, a copy of which is also attached for the convenience of the Examiner. Both of these publications clearly demonstrate that the skilled artisan had a reasonable expectation of success for the practice of the invention in accordance with the disclosure in the specification, i.e., reasonable expectation of success that a plant made in accordance with the description in the specification would have a reduction in seed-oil and a concomitant increase in plant carbohydrate and/or protein.

*Amount of experimentation necessary.*

Applicants submit that an undue amount of experimentation is not required in order to practice the claimed invention. As the Examiner is aware, experimentation is permissible as long as it is not undue. The Neogi et al. poster and the published application clearly demonstrate that the claimed invention can be practiced without undue experimentation. These publications show that the preparation of a plant containing and expressing an oil-suppressing gene that results in a plant

with a reduction in seed-oil and a concomitant increase in plant carbohydrate and/or protein is done without undue experimentation. Simply transforming a cotton plant with a *Brassica* non-functional allele of the *FAD2* gene, an oil-suppressing gene, in accordance with the description in the specification yields plants having the claimed phenotypic characteristics. Thus, an undue experimentation is not required to practice the claimed invention following the guidance provided in the specification.

In view of the above amendments and remarks, Applicants submit that the specification fully enables the practice of the claimed invention by a skilled artisan. Withdrawal of this rejection is requested.

The Examiner rejected claims 2, 17, 18, 23, 24, 25, 32-35 and 43-44 under 35 U.S.C. § 112, second paragraph for being indefinite. Claim 2 has been amended to specify the species encompassed by the term "canola." Claim 5 has been amended to obviate the antecedent basis issue. Claims 24, 43 and 44 have been canceled. Thus, this rejection with respect to these claims has been obviated by these amendments.

Applicants note that claims 18 and 25 specifically sets forth the genes that are expressed early or late in the seed-oil biosynthetic pathway, thus defining the metes and bounds of these terms. Thus, Applicants submit that claims 18 and 25 are definite to a skilled artisan, which obviates this rejection with respect to these claims.

Applicants note that claim 34 specifically sets forth a list of exogenous (formerly, external) stimuli, thus defining the metes and bounds of the term "exogenous stimulus." Thus, Applicants submit that claim 34 is definite to a skilled artisan, which obviates this rejection with respect to this claim.

With respect to the terms "a gene early in the oil biosynthetic pathway" and "a gene late in the oil biosynthetic pathway" in claims 17 and 23, Applicants submit that these terms are definite to a person skilled in the art. Definiteness is determined with reference to a person of ordinary skill in the art. *Miles Laboratories, Inc. v. Shandon Inc.*, 997 F.2d 870, 875, 27 U.S.P.Q.2d 1123, 1126 (Fed. Cir. 1993), *cert. denied*, 510 U.S. 1100 (1994) ("The test for definiteness is whether one

skilled in the art would understand the bounds of the claim when read in light of the specification."); *In re Warmerdam*, 33 F.3d 1354, 1361, 31 U.S.P.Q.2d 1754, 1759 (Fed. Cir. 1994) ("The legal standard for definiteness is whether a claim reasonably apprises those of skill in the art of its scope."). A skilled artisan knows the genes that are involved in the oil biosynthetic pathway, and knows which of those genes are involved "early" in this pathway or "late" in this pathway, especially in view of the specification which describes genes that are involved "early" and "late" in this pathway. Since a skilled artisan knows to what the terms "a gene early in the oil biosynthetic pathway" and "a gene late in the oil biosynthetic pathway," refer and thus understands the metes and bounds thereof, the claims are definite. *Miles Laboratories*, 997 F.2d at 875, 27 U.S.P.Q.2d at 1126; *In re Warmerdam*, 33 F.3d at 1361, 31 U.S.P.Q.2d at 1759.

With respect to the term "external stimulus" in claims 32, 33 and 35, Applicants submit that this term as originally present and as amended to "exogenous stimulus" is definite to a person skilled in the art, especially when read in the context of the specification. Paragraph [00020] provides examples of external stimuli for activating promoters. All of these stimuli originate external to the plant, i.e., they originate outside of the plant, and cause stimulation (activation) of a respective promoter for the expression of the operatively linked transgene. Since a skilled artisan knows to what the term "exogenous stimulus," refers and thus understands the metes and bounds thereof, the claims are definite. *Miles Laboratories*, 997 F.2d at 875, 27 U.S.P.Q.2d at 1126; *In re Warmerdam*, 33 F.3d at 1361, 31 U.S.P.Q.2d at 1759.

In view of the above amendments and remarks, Applicants submit that the claims are definite to a skilled artisan. Withdrawal of this rejection is requested.

The Examiner rejected claims 1-2, 4, 6, 9-11, 15-16, 19-22, 26, 29, 31, 36, 38 and 41-42 under 35 U.S.C. § 102(e) as being anticipated by Lassner et al. (US 6,444,876). The Examiner contends that Lassner et al. teaches a reduced seed-oil content plant cell that expresses a seed-oil suppressing transgene under control of a plant-active promoter. The Examiner further contends that carbohydrates would inherently be increased in these cells of Lassner et al. because of the

interconnected nature of the oil and carbohydrate biosynthetic pathways. Applicants submit that the Examiner is in error in this rejection.

Lassner et al. discloses the isolation of nucleic acid sequences encoding acyl-CoA:cholesterol acyltransferase (ACAT) related proteins, i.e., ACAT-like proteins. ACAT catalyzes the formation of cholesterol esters and is key to controlling the intracellular cholesterol storage. These nucleic acid sequences were isolated by comparing homology to the human and mouse ACAT genes. Genes encoding ACAT-like genes were isolated from *Arabidopsis*, maize, Mortierella, *Caenorhabditis elegans* and rat. The *Arabidopsis* gene is 22% similar to the human gene. The *Arabidopsis* gene is 30% identical to and 44% similar to the rat gene. No experiments describing the activity of the *Arabidopsis* ACAT-like gene is presented in Lassner et al., although Lassner et al. does suggest that such gene would be active for the formation of a sterol ester and/or triacylglycerols. Lassner et al. shows that the rat ACAT-like gene has diacylglycerol acyltransferase activity, but does not show whether the *Arabidopsis* ACAT-like gene would have a similar activity. Lassner et al. shows the transformation of plants using the *Arabidopsis* ACAT-like gene and the rat ACAT-like gene in Examples 7-8. Interestingly, in these examples, Lassner et al. does not present any results of the analysis of plants transformed with the *Arabidopsis* ACAT-like gene. However, Lassner et al. notes that leaves of *Arabidopsis* plants having the rat ACAT-like gene have a 10-fold increase in the quantity of triacylglycerol. There is no disclosure in Lassner et al. that the rat ACAT-like gene in an antisense orientation could suppress the formation of triacylglycerol in *Arabidopsis*. Thus, there is no disclosure in Lassner et al. that the *Arabidopsis* ACAT-like gene is a seed-oil suppressing gene nor that it could suppress seed-oil if placed in antisense orientation in a plant cell or plant. Consequently, Lassner et al. does not disclose a plant cell or a plant that comprises a seed-oil suppressing gene in which the expression of the gene results in a reduction of seed-oil with a concomitant increase in plant carbohydrate and/or protein. Thus, Applicants submit that Lassner et al. cannot anticipate the claimed invention.

Applicants also note that claim 16 and its dependent claims are not directed to a nucleic acid in an antisense orientation. Specifically, claim 16 refers to transforming a host cell with a DNA

construct that is only in the sense orientation ("in the **5' to 3' direction**") and "a DNA sequence encoding a **protein** having an amino acid sequence or SEQ ID NO:2." (emphasis added) Claims 19 through 26, although including seed, all derive from claim 16. Thus, it is clear that claims 16-32 do not anticipate the suppression of oil biosynthesis genes in seed to increase the production of commercially important macromolecules.

In addition, Lassner et al. does not disclose plant cells or plants in which a seed-oil suppressing gene is a mutant allele of a gene naturally occurring in the plant as required by claims 6, 9 and 16. Thus, Lassner et al. cannot anticipate these claims.

Also, Lassner et al. does not disclose plant cells or plants in which a seed-oil suppressing gene controls seed-oil content by suppressing seed-oil storage as required by claim 11. Thus, Lassner et al. cannot anticipate this claim.

Furthermore, Lassner et al does not disclose a plant in which the seed-oil content is reduced to a level of 1% to 17% as required by claim 41. Nor does Lassner et al. disclose a plant in which stable pools of sucrose are generated as required by claim 42. Thus, Lassner et al. cannot anticipate these claims.

In view of the above amendments and remarks, Applicants submit that Lassner et al. does not anticipate the claimed subject matter. Withdrawal of this rejection is requested.

The Examiner rejected claims 1-44 under 35 U.S.C. § 103(a) as being obvious over Lassner et al. in view of Auld et al. (*Proc Beltwide Cotton Conf* **1**:550-552, 1998) and further in view of Dudley et al. (*Maydica* **37**:81-87, 1992). Because Auld et al. and Dudley et al. do not cure the deficiencies of Lassner et al., Applicants submit that the Examiner is in error in this rejection.

In addition, to the comments made above with respect to Lassner et al., Applicants further note that this reference does not disclose plant cells or plants that comprise a first seed-oil suppressing gene and a second seed-oil suppressing gene.

Auld et al. discloses mutagenesis to increase cotton fiber quality. However, Auld et al. does not describe a reduction in seed-oil biosynthesis to increase fiber quantity. Thus, Auld et al. does not describe plants with a reduction in seed-oil and a concomitant increase in plant carbohydrate

and/or protein by the expression of seed-oil suppressing genes under control of plant-active promoters. Furthermore, Auld et al. does not disclose plant cells or plants that comprise a first seed-oil suppressing gene and a second seed-oil suppressing gene.

Dudley et al. demonstrates the correlated response of breeding for high oil content in corn kernals on lowering starch content in corn kernels. Dudley et al. does demonstrate that after 47 generations of breeding for high oil content and then reversing the selection criteria that the starch content also reverses. However, from the data and discussion presented in Dudley et al. it is clear that Dudley et al. did not envision selection for low oil as a tool to increase starch content. Dudley et al. does not demonstrate nor discuss that starch percent could be used to increase starch percent above the preselection level by breeding for low oil. Although Dudley et al. does provide compelling data that selection for high oil or high protein content can decrease starch percent, there is no data, nor discussion, that the inverse is possible. Thus Dudley et al. does not describe plants with a reduction in seed-oil and a concomitant increase in plant carbohydrate and/or protein by the expression of seed-oil suppressing genes under control of plant-active promoters. Furthermore, Dudley et al. does not disclose plant cells or plants that comprise a first seed-oil suppressing gene and a second seed-oil suppressing gene.

Thus, Applicants submit that the combination of Auld et al. and Dudley et al. does not render the claimed invention obvious because the combination does not suggest the presently claimed invention. There is no disclosure in this combination to produce plants having a seed-oil suppressing gene or plants having a first seed-oil suppressing gene and a second seed-oil suppressing gene in which the plant has a reduction in seed-oil and an increase in plant carbohydrate and/or protein.

In view of the above amendments and remarks, Applicants submit that the cited prior art does not render the claimed subject matter obvious. Withdrawal of this rejection is requested.

In view of the above amendments and remarks, it is believed that the claims satisfy the requirements of the patent statutes and are patentable over the prior art. Reconsideration of the

instant application and early notice of allowance are requested. The Examiner is invited to telephone the undersigned if it is deemed to expedite allowance of the application.

Respectfully submitted,

ROTHWELL, FIGG, ERNST & MANBECK, p.c.

By ______________________________

Jeffrey L. Ihnen
Registration No. 28,957
Attorney for Applicants
1425 K Street, N.W., Suite 800
Washington, D.C. 20005
Telephone No.: (202) 783-6040
Facsimile No.: (202) 783-6031

**ATTACHMENTS:** Papers relating to Negoi et al. (2006) (Plant Biology 2006 meeting announcement, meeting abstract, poster and a document containing the information from the poster)
U.S. patent application publication No. 2007/0028330

#1379406v1<RFDMS> -1760-297.Amendment